

## CLAIMS

1. A communication device (F) for transmitting data to and receiving data from one or more other communication devices (A, B, C, D, E) via a network (1), wherein the communication device is arranged to respond to address information (26) broadcast by a second communication device (G) joining said network by determining whether a message (27) containing address information relating to said one or more other communication devices has previously been forwarded from the communication device to any other of said one or more other communication devices and, if not, sending said message to the second communication device.

2. A communication device (G) comprising:  
means for transmitting data (2, 3) over a network (1); and  
means for receiving data (2, 3) via the network;  
configured to respond to a detection of activity (23) on the network by:  
broadcasting address information (26) of the communication device to one or more other communication devices; and  
receiving a message (27) sent from one of said other communication devices, the message comprising address information relating to said one or more other communication devices and extracting said address information therefrom.

3. A communication device (G) according to claim 2, configured to respond to the broadcast of address information (26) from a further communication device (H) by determining whether a message (27) containing address information relating to said one or more communication devices (A, B, C, D, E, F) has been sent by the communication device to another communication device previously and, if not, sending said message to said further communication device.

4. A communication device (G) according to claim 2 or 3, configured to broadcast address information (26) to said one or more other communication devices (A-F) if no network activity is detected.

5 5. A communication device (G) according to claim 4, arranged so that, if no message (27) is received in response to the broadcast of address information (26), the address information is rebroadcast periodically.

10 6. A communication device (G) according to claim 5, arranged to increase a period between successive broadcasts of the address information (26).

15 7. A communication device (F, G) according to claim any one of the preceding claims, operable in a first mode, in which a receiver (3) within said receiving means (2, 3) is inactive, and in a second mode, in which the receiver is activated in order to receive data from said one or more other communication devices (A, B, C, D, E) and arranged to switch from the operating in the first mode to operating in the second mode in response to a detection of activity (23) on the network (1).

20 8. A communication device (F, G) according to claim 7, configured to respond to said detection of activity (23) on the network (1) by determining if said activity comprises one of a wakeup signal addressed to the communication device or a broadcast wakeup signal and, if so, continuing to operate in said second mode to receive a further message (24, 26).

9. A communication device (F, G) according to any of the preceding claims, configured for use in a ubiquitous radio network (1).

30 10. A communication device (F, G) according to any of the preceding claims, configured for use in a ZigBee network.

11. A communication device (F, G) any of claims 1 to 8, configured for use in a Bluetooth network.

12. A communication device (G) according to any one of the 5 preceding claims, further comprising a sensor (6) and means (4) for generating and transmitting data based on the output of the sensor via the network (1).

13. A communication device (G) according to claim 12, wherein said sensor (6) is arranged to monitor one or more environmental conditions.

10 14. A monitoring system comprising a plurality of communication devices (G) according to claim 12 or 13.

15 15. A communication system comprising a network (1) and a plurality of communication devices (F, G) according to any of claims 1 to 13.

16. A method of disseminating address information from a communication device (F) connected to a network (1), comprising:  
20 receiving broadcast address information (26) from a second communication device (G); and,

25 in response to said message, determining whether a message (27) containing address information relating to one or more other communication devices (A, B, C, D, E) connected to the network has previously been forwarded from the communication device to any other of said one or more other communication devices and, if not, sending said message to said second communication device.

17. A method for connecting a communication device (G) to a network (1), comprising:

30 detecting activity (23) on the network; and  
in the event of an activity being detected, broadcasting address information (26) of said communication device to one or more other

communication devices (A, B, C, D, E, F) connected to the network, receiving a message (27) from one of said communication devices comprising address information relating to said one or more communication devices and extracting said address information therefrom.

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18. A method according to claim 17, comprising:

in response to broadcast of address information from a further communication device (H), determining whether a second message (27) containing information relating to said one or more communication devices (A, B, C, D, E, F) has been forwarded by the communication device (G) to any other communication device and, if not, sending the second message to said further communication device.

19. A method according to claim 17 or 18, comprising, if no network activity (23) is detected, broadcasting the address information (26) to said one or more other communication devices (A-F).

20. A method according to claim 19, comprising, if no message (27) is received following the broadcast of address information (26), rebroadcasting the address information periodically.

21. A method according to claim 20, comprising increasing a period between successive broadcasts of the address information (26).

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22. A method according any one of claims 16 to 21, comprising:

operating the communication device (F, G) in a first mode, in which a receiver (2) within the communication device is inactive; and  
switching to operating the communication device in a second mode, in which the receiver is activated in order to receive data from said one or more other communication devices (A, B, C, D, E) in response to a detection of activity (23) on the network (1).

23. A method according to claim 22, comprising, in response to detection of activity (23) on the network (1), determining whether said activity comprises one of a wakeup signal addressed to the communication device (F, G) or a broadcast wakeup signal and, in response to a positive determination, 5 continuing to operate in said second mode to receive a further message (24, 26).

24. A method according to any of claims 16 to 23, further comprising receiving output from a sensor (6) and generating and transmitting via the 10 network (1) data based on said output.